

REMARKS

Claims 1-24 are pending. Claims 1, 4, 9, 11-13, 15 and 21-23 have been amended. Claims 2-3, 5-8, 10, 14, 16-20 and 24 are original. No new matter has been introduced by the amendment.

1. Title of The Invention

The title has been changed to "Improved Spin-Valve Magnetoresistive Thin Film Element", which is clearly indicative of the invention to which the claims are directed. Support for the amended title can be found in the Applicants' specification, for example, in paragraph 30, lines 5-8. Accordingly, the objection to the title has been overcome and should be withdrawn.

2. Abstract of The Disclosure

The abstract of the disclosure has been objected to because it is not directed to the now claimed invention. The abstract has been amended to direct to the now claimed invention. Support for the amended abstract can be found in the Applicants' specification, for example, in original claim 1 and in paragraph 283, lines 1-8. Accordingly, the objection to the abstract has been overcome and should be withdrawn.

3. Claim Objection

Claim 13 has been objected to because of informalities. Claim 13 has been amended to recite said first pinned magnetic layer and said second pinned magnetic layer each having a saturation magnetization M_s and a film thickness t . Thus the

phrase as recited in claim 13 “wherein a product of said saturation magnetization M_s and said film thickness t is a magnetic film thickness, wherein said first pinned magnetic layer and said second pinned magnetic layer have different magnetic film thicknesses” is a proper limitation and is linked to the other part of the claim. Accordingly, the Applicants respectfully submit that objection to claim 13 has been overcome and should be withdrawn.

4. Claim Rejections under 35 U.S.C. § 112, Second Paragraph

Claims 1-24 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The Applicants respectfully traverse these rejections based on the following remarks.

Claims 1, 11-13 and 22-23 have been amended to recite a specific structural limitation “wherein said thickness of said first pinned magnetic layer, said thickness of said second pinned magnetic layer, and said ratio of said thickness of said first pinned magnetic layer to said thickness of said second pinned magnetic layer are configured such that said exchange coupling magnetic field has an intensity of at least about ...”. Support for the amended claims 1, 11-13 and 22-23 can be found in the Applicants’ specification, for example, in paragraph 283, lines 1-8. Claims 9 and 21 have been amended to include all the limitations from claims 1 and 13, respectively. Thus claims 9 and 21 are now proper independent claims. Support for the amended claims 9 and 21 can be found in the Applicants’ specification, for example, in original claims 1, 9, 13 and 21, and in paragraph 283, lines 1-8.

In view of the above amendment and remarks, the Applicants respectfully submit that rejections against claims 1, 11-13, 22-23 and 9, 21, thus the rejections

against dependent claims 2-8, 10 and 14-20, 24, which depend from independent claims 1 and 13, respectively, have been overcome and should be withdrawn.

5. Claim Rejections under 35 U.S.C. § 103(a)

Claims 1-24 have been rejected under 35 U.S.C. § 103(a) over Fontana, Jr. et al. (U.S. Pat. No. 5,701,223) in view of Iwasaki et al. (U.S. Pat. No. 5,549,978). The Applicants respectfully traverse these rejections based on the following remarks.

With respect to claims 1 and 13, the Examiner has conceded that Fontana is silent as to “said antiferromagnetic layer comprises one of an X-Mn alloy, where X is selected from the group consisting of Pt, Pd, Ir, Rh, Ru, Os and combinations thereof, and a Pt-Mn-X’ alloy, where X’ is selected from the group consisting of Pd, Ir, Rh, Ru, Os, Au, Ag and combinations thereof” and “the exchange coupling magnetic field has an intensity of at least about 1 kOe”. The Examiner tries to overcome this deficiency by asserting that, lacking any unobvious or unexpected results, one would be motivated to substitute PtMn (and the like) as described in Iwasaki for the NiO film disclosed by Fontana. The Examiner further asserts that “with the above modification, as the thin film MR structure would have been the same as the claimed structure, the Examiner considers the claimed “exchange coupling magnetic field”, i.e., “of at least 1 kOe” would be met as well, in far as the actual structure that produces these results has been positively set forth in the claim(s)”.

The Applicants respectfully traverse on the grounds that the claimed limitation “the exchange coupling magnetic field has an intensity of at least about 1 kOe” is not inherent of the material used for the pinned magnetic layers, rather is achieved only after experimentation and fine adjustment of a thickness of said first pinned magnetic layer, a thickness of said second pinned magnetic layer, and a ratio of said thickness

of said first pinned magnetic layer to said thickness of said second pinned magnetic layer.

In view of the above remarks, the Applicants respectfully submit that Fontana and Iwasaki do not teach or suggest all the limitations in amended claims 1 and 13, and thus a *prima facie* case of obviousness has not been established (see MPEP 2143). Accordingly, the rejections against amended independent claims 1 and 13, and thus the rejections against claims 2-8, 10-12 and 14-20, 22-24, which depend from independent claims 1 and 13, respectively, have been overcome and should be withdrawn.

Claims 9 and 21 have been amended to recite a thickness of said first pinned magnetic layer, a thickness of said second pinned magnetic layer, and a ratio of said thickness of said first pinned magnetic layer to said thickness of said second pinned magnetic layer being configured such that said exchange coupling magnetic field has an intensity of at least about 1 kOe. As explained above regarding claims 1 and 13, Fontana and Iwasaki do not teach or suggest all the limitations as recited in amended claims 9 and 21. Accordingly, the rejections against claims 9 and 21 have been overcome and should be withdrawn.

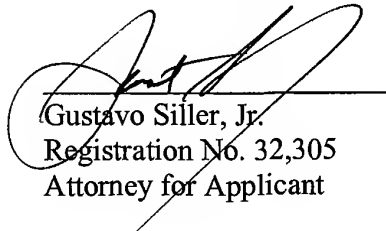
Application No. 10/624,931
Amendment dated August 29, 2006
In Response to non-final Office Action mailed June 28, 2006
Page 19 of 19

6. Conclusion

Based on the above amendments and remarks, the Applicants submit that the claims are in condition for allowance. The examiner is kindly invited to contact the undersigned attorney to expedite allowance.

Respectfully submitted,

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